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ScienceDirect

Procedia - Social and Behavioral Sciences 106 (2013) 317 – 327

Procedia
Social and Behavioral Sciences

4th International Conference on New Horizons In Education

Activating resources and its use in e-learning

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Abstract

Education has been always linked with the human kind and it has been undergoing continual development and gradual innovative processes. E-learning became a phenomenon of the second half of 20th century and the beginning of 21st century; it comprises variety of individual elements which are usually complexly interwoven, creating a comprehensive system and allowing for en effective development of one's personality, mainly – but not exclusively – of its cognitive part. This kind of development should be resulting from active learning when a student dedicates himself/herself to an intensive studying activity arising ideally from his/her own interest, without any apparent pressure or more or less without someone else's help. The activity, however, must be specifically aimed, controlled, guided and provided with feedback. In order for students to be able to learn actively, it is essential to create appropriate situations, involving the activating resources. Modern education technologies represent such resources, which is reflected in this theoretical study focused on activation of a student.

From a technological point of view, the resources can involve extensive full-distance education systems with sophisticated tools securing cooperative learning, but on the other hand, the resources can involve simply support for real-time traditional classes. Nevertheless, e-learning can only be an adequate alternative or part of the traditional education, if it is build upon deep and comprehensive pedagogical analysis of the educational process and all its elements, processes and relations.

Selection and peer-review under responsibility of The Association of Science, Education and Technology-TASET, Sakarya Universitesi, Turkey.

Keywords: activation, student, e-learning.

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doi:10.1016/j.sbspro.2013.12.037

1. E-LEARNING TECHNOLOGIES AS A SOURCE OF ACTIVATION POTENTIAL

Modern educational technologies offer a variety of possibilities for more effective learning, if *effective activation of students* is provided; this applies to face-to-face education, as well as distance education, which is specific in many respects. By virtue of the e-learning technologies, everyone can become a distance student. A healthy person or a handicapped one, if he/she is able to study independently on a required level and has his/her own responsibility for the educational process and his/her own goal to achieve. This matter is narrowly related to desired fair opportunities in education.

According to Svatoš (2009), new educational technologies represent progress in development of didactic means supporting educational aims. Their general features are:

- integrity (interconnectedness of individual means);
- multimediality (different pieces of information from one source);
- interactivity (user's active participation in the process of teaching-learning);
- an increased importance between so called hardware and software;
- more independent educational roles (more independency for a student);
- creating of relatively new concepts of education (distance education, e-learning, blended learning, individualized education) based on controlling user's learning activities and his/her self-education.

Due to its high educational potential, e-learning has become a promisingly developing area of pedagogical theory and practise that keeps on being continually, systematically and intensively worked on, both on national and international level. Some of the most important works are: S. B. Eom & J. B. Arbaugh (2011), R. C. Clark & R. E. Mayer (2011), Y. J. Joo, K. Y. Lim & E. K. Kim (2011), A. Mauthe & P. Thomas (2004), J. Anderson a R. McCormick (2005), S. Bennett, K. Maton & L. Kervin (2008), S. Kluge & L. Riley (2008), R. Möhlenbrock (1982), M. F. Paulsen, (2003), D. S. Smith & J. B. Caruso (2010), D. Tapscott, (1998), A. Bates & G. Poole (2003), R. Ramanau, A. Hosein & Ch. Jones (2010), A. Barešová (2003), L. Eger (2002).

There is no doubt that one of the *important aspects of e-learning is the activation of a student.* Other important aspects are interactivity and multimediality. Possibilities of activating students, i.e. individual learners, vary; they cannot be associated only with study fields involving particular educational content. Communication between a teacher and a student, educational activities and educational environment can also contribute to activation. The primary aim of activation is to change passive students into “immediate participants in education” (Kotrba, Lacina, 2007). However, the activation is also related to teachers. Student activity means increased, intensive work, on one hand based on inner motives, spontaneous interests, emotional incentives and life needs, and on the other hand on conscious effort (Maňák, 1998).

From the point of view of formative-educational process and achieving preset goals, the inner activity is important, because it emerges from person's own resources, interests, attitudes and beliefs. Such an activity can be difficult to initiate or direct towards a desired goal in some cases, yet teachers have plenty of possibilities for external activation. It is important to watch over an activity that is illusory, pretended and formal, and thus not effective.

Also passivity of students occurs within e-learning, which is the opposite of activity. Such a state is undesirable and it is necessary to eliminate it. This can be done with help of e-learning technologies which can be considered as one of the conditions of successful student activation.

2. POSSIBILITIES OF STUDENT ACTIVATION IN E-LEARNING

Appropriate student activation constitutes an important purpose of a teacher and didactic means, because if student attention is not caught, the acquiring process cannot be effective. All cognitive processes, either

perceiving or thinking, are focused on a particular object. The basic attribute of attention is thus its focus on an object, which can be either material or mental (content of our mind), and our concentration on it (Linhart, 1987). Feelings, perceptions, remembering, thinking and imagination belong to mental processes with specific content; attention does not have any specific content, but represents itself within perception, thinking, remembering and other cognitive processes (Pardelt, Boroš, 1979). As soon as attention becomes part of the perception process, the person is not only hearing, but is listening and becoming absorbed, is not only looking, but is watching and contemplating. His/her perception changes into *active* dealing with perceived material and its acquisition for a certain purpose (Rubinštejn, 1964). All this constitutes important moments for creating successful learning process (e-learning).

If we narrow down the issue of attention only to the area of e-learning, it can be concluded that from a psychological point of view, it is justified and desired to make use of sophisticated education systems with a variety of resources. A question emerges why studying through e-learning with multimedial elements attracts student attention. It is known from psychology that every contrast between stimuli catches attention. Education using multimedial resources offers an alternative to students, something new in form of active participation. That is something truly essential for student development, avoiding mere perception of transmitted verbal commentary provided by a teacher. In case of e-learning, the attention of students is caught inadvertedly, unintentionally, by the appealing nature of a matter itself and is subjected to immediate interest. This is extremely important for education, because – among other reasons – it is indisputable that intentional attention develops from unintentional attention.

Unintentional attention is not exclusively passive, but involves activity as well. It is unconditionally necessary for a teacher to be able to catch attention of students and to base e-learning on unintentional attention conditioned by immediate interest. Using the influence of multimedial resources for unintentional attention is only one of the options, although an important one. However, it is desirable to support development of intentional attention by using various didactic means. The activation is closely connected to motivation, which is a direct consequence of cognitive and affective-social factors. According to Badinská (2007), the use of information technologies makes the educational process motivating and dynamic.

3. MULTIMEDIALITY, INTERACTIVITY AND E-LEARNING

Communication has always been part of our lives and is transferred through various media. According to Sak et al. (Sak, Mareš, Nová et al., 2007), it is possible to differentiate between 4 stages of media existence in human civilization and the current stage can be characterized by using computers and the Internet, and by interconnecting individual media into multimedia through digitalization.

The development happening in the field of communication and communication media takes place also in education, which forms a fundamental part of human existence. Traditional verbal communication between an educator (teacher, trainer...) and a student (or students) has been complemented by other media and technologies, at first drawings, clay plates, papyrus and later by paper, blackboards, book printing, materials for back projectors, educational videos, didactic computer software, electronic educational presentations, educational web portal, e-learning system, e-beam, interactive boards, etc. Today's education can be globally characterized by continual implementation of multimedial, hyper-textual and hyper-medial educational aids. According to for example Burgerová and Beisetzer (2008), interactive elements on different levels of interaction directly determine the quality of e-learning.

Everyone who participates in e-learning keeps in touch with e-learning tools, either as their user or as their creator. It is necessary to dedicate enough attention to an appropriate use of the e-learning tools in the educational process, because only the right methodological use allows to achieve educational goals more effectively. If a teacher has e-learning tools at his/her disposal, it does not necessarily mean that the tools will be beneficial for acquiring knowledge, skills and attitudes. On the contrary, if they are used inappropriately, they can be counterproductive.

With the beginnings of computer use and spreading of computer use in education, the term *multimedia learning aid* has been becoming more and more common. The multimedia learning aids are important for education, because they contain information expressed in a way that appeals to senses of students, which fulfils the requirement of illustrativeness. The use of multimedia appeals to several sensory receptors at the same time which brings better study results and subject matter is acquired in a more permanent and deeper way.

Generally, multimedia can be perceived as digital aids that integrate different document formats, namely data (e.g. text, tables, animations, figures, pictures, schemes, illustrations, charts, maps, sound, verbal commentary, videos, etc.).

Interactivity allows two-way communication (a student vs. multimedia learning aid) and a student has a possibility to actively engage in the course of a program via its user interface, and not only passively perceive content. Multimedia requires technology for operation (so that a user can interact with the system); usually, the technology includes a multimedia computer with specific peripheral devices.

Multimedia learning aids that are widely used are e.g. educational software, didactic computer games or multimedia educational presentations. If multimedia are used in education, it is referred to as so called *multimedia learning* (Mayer, 2001), but it is not restricted only to this case. For implementation of multimedia training, it is not important whether the learning process involves multimedia (in the form of integrated interactive learning aids) or individual aids in various formats (individual media) which allow to present information (text, images, video, sound...) influencing various human senses simultaneously.

According to the learning theory, the more intensively a student works with study material, the more effective the learning is. In case of printed text, it is possible to highlight and underline important passages, to write down excerpts in margins, put down reformulated thoughts, and moreover, to return to this kind of personalized material at any point later on. Electronic books do not have this possibility (yet). If we took a traditional printed book and transferred it into an electronic form (e.g. pdf format) with all its features, preserving linearity, continuity and finality of the text, it would not offer effective learning options; it is not possible to work with it in any other way than to scroll up and down on a screen. Experience shows that many students prefer to print the content of an electronic book (and even to bind it) and study in the traditional way.

The attractiveness of electronic text for a student can be increased by transforming it into a hypertext form, making the text interactive. In case of transformation of plain text, it is called *hypertext learning aids*, and in case of transformation of text with images, tables and charts, possibly with animations, videos and sounds, it is called *hypermedia learning aids*.

The characteristics of hypertext follow from its virtual nature; in comparison with printed text stored in the form of physical characters on a physical surface, it is stored in electronic virtual codes kept in a computer memory or network systems. Generally speaking, the nature of hypertext as a type of media means that there is no central, main text with subordinate passages, as it is the case of the printed page layout.

Hypertext learning aids make it usually clear which part of text is the main one and where a student should start from when learning (it does not matter whether hypertext content in LMS is stored on a CD-ROM or available on-line). However, other texts can lack any hierarchical structure. An author (teacher) cannot know without explicit instructions what order a student will choose for reading a text, and if a material is shared on-line, neither which other materials will be connected with it (which links will be directed towards the text). The method of study represents the main difference between the traditional text type and hypertext which presupposes multi-sequential reading (Kobíková, 2012). Within hypertext, a reader (student) marks a link (most commonly underlined/highlighted) with a mouse pointer that carries metadata (a hyperlink to another document), activates it, and the respective material appears on a screen. When creating hypertext, it is advisable not to include too many visual materials such as pictures, figures, charts, schemas, etc. that are not directly related to the educational material. There is a risk that student's attention gets carried away.

New educational media can support learning as an active and creative process, convey realistic learning situations and transform learning into an interactive process. However, the question is what form should the educational material have to become a truly interactive tool. According to Hartl (1999), it is necessary to observe whether pieces of information are provided in a linear way or are interlinked, whether they are

processed dynamically (e.g. simulations), whether they are provided in a parallel way and whether pieces of information of one type can be transformed into another type.

4. ACTIVATION THROUGH DIDACTIC GAMES

Study materials for e-learning can have the form of a game. It is thus possible to incorporate gaming activities into the educational process and make it more attractive and natural for students. A game is an activity for one or more persons which does not need to have a specific purpose, but is supposed to bring joy or have a relaxation effect.

Even before the massive development of e-learning, there was a continual growth in availability of computers for children, youth and also adults and along with this growth computer games began to appear. A new way of using computers emerged; computers were no longer used only for working, but also for entertainment, recreation and relaxation. At first, the games were only simple programs with poor quality graphics and only sporadically they involved sound.

Every computer game has its basis in a virtual world (virtual environment) where a player enters through external devices connected to a computer (either common ones such as keyboard and mouse or special ones such as joypad, joystick or wheel) and influences the virtual world through them. The goal of a player is to complete given tasks in the virtual environment as well as possible, e.g. to go through a certain route as fast as possible, to hit the most targets, to choose the best dress, etc. (in this context we speak about so called genres – strategic games, simulators, arcade games, heroic games, adventures...). A computer game can serve for entertainment, but also for improving knowledge, senses and thinking. Games are sometimes used also in medicine or psychology. Through the virtual world of computer games, it is possible to get to know the unreal world (sci-fi, fantasy world), as well as the real world. A computer game becomes a part of the real life environment – an environment which is necessarily needed by a child in the ontogenetic stage of cognition – but which is not immediately available to him/her. However, excessive substitution of the real world by the virtual one is not desirable.

From the growing trend of computer games it might seem that traditional games and its themes have been disappearing. But in many cases mere virtualization occurs – games and toys have been transferred from the real into the virtual one. This is narrowly related to virtualization of education. According to Marešová and Klement (2001), virtual worlds provide educational institutions with a transition from a teacher-led education to education oriented towards a student. This model corresponds to constructivist theories where a learner uses his/her experience to actively contribute to understanding of the matter; this makes more sense for a learner than to be given study material in an already organized form. In the virtual worlds, students are more actively engaged and stay in the process of constructing meanings on the basis of their experience. The virtual worlds thus provide an opportunity for teachers to implement learner-oriented pedagogical principles which support active, constructivist teaching focused on problem solving.

One of the main features of a game is that it is an activity accompanied by joy and pleasure, but on the other hand there might be also negative emotions in case of a loss. When playing a game, a person is enjoying it, but when learning or working, it is about achieving educational and work goals and fulfilling obligations. When playing games, including computer games, the only goals that are achieved are the goals contained within the game. The so called game goals can be achieved on a certain level of difficulty and quantity and quality of fulfilling such goals become the purpose of the game.

A didactic computer game is a specific type of educational software. It is a computer program that – in an entertaining way – creates conditions for activities aimed at developing one's personality (Dostál, 2009). Regarding the activity that is executed when playing didactic games, it can be stated that a didactic game played on a computer is an activity of an individual (or individuals) which has its basis in the virtual world simulated by a computer and it consists primarily in developing one's personality, whereas it can provide entertainment, recreation and relaxation.

5. VIRTUAL CLASS AS COOPERATION SUPPORT

Within e-learning, a virtual class has an activation effect on a student. It is an on-line **study space** where the traditional class environment can be substituted to a certain extent. It makes it possible for a teacher to present subject matter as if he/she was standing in front of a real class. The teacher can provide immediate **feedback and this way control the learning process.** A student of the virtual class is a specific kind of a student, which is documented also by findings of Palloff and Pratt (2003) who use the term "virtual student".

The virtual class is thus a classroom in virtual space. According to Zlámalová (2006), it is a web-based interactive tool allowing students to meet, communicate and cooperate, without the need to be present in person. It provides the possibility to gain considerable benefits of the on-line electronic education when preserving the benefits of the traditional, in-class education. The way the virtual class works is the following: after a student connects to a class, a window opens with a list of participants and a set of tools allowing on-line cooperation. A tutor (teacher) presents prepared matter on "a blackboard", creates new content, and works with office software within the environment or surfs on the Internet. Voice communication, e.g. lecturing, is happening through telephone connection. Among others, virtual classes can be used as an authorial tool for creating electronic courses. The virtual class takes place at an arbitrary place and time; the essential requirement for the realization is Internet connection (Mikulecká, Poulová, 2002).

A teacher controls education in the virtual class, determines study matter, procedure and pace. When teaching, he/she can examine students and evaluate them, ask questions, split students into teams and give them individual tasks. Virtual classes involve cooperation and also for example brainstorming. Students can leave the class when needed or they can ask the teacher about things they do not understand. Students can communicate also privately; in the real class, they whisper or send notes or text messages, in the virtual one they have access to a private chat. The teacher prepares materials beforehand and then he/she talks about it and can project it as well (in case of the traditional class, he/she uses a back projector, data projector or an interactive board). He/she can use the board in the virtual class for writing or drawing, and the same can be done by students. He/she can also provide some extra materials to students (Pravda, Barešová, 2004; Tiffin, Rajasingham, 1995).

The virtual class allows the following:

- to present subject matter on the virtual board (the teacher is lecturing while using the presentation, showing content of data files, drawing on the board, etc.);
- two-directional voice and visual communication between the teacher and students (it means that the teacher can communicate with students, can examine them and talk to them directly);
- to practise subject matter by tests integrated in the virtual class;
- a chat with students.

It provides also other options such as an access to supporting materials, plan of an on-going course or more advanced tools for communication with students (desktop sharing, remote access). Virtual classes involve a specific teacher approach towards students (e-students), which was summarized by Pavlíček (2003) as follows:

- orientation towards a student, defining a new role of a student, understanding student needs in the sense of mobility and new communication tools, as well as globalization elements;
- communication, mainly in the written form, but also through telephone or other audio and visual tools, understanding the change of style in communication;
- discussion moderation in the sense of creating and monitoring their scope, suggesting topics, initiating discussions;
- accepting and supporting a virtual community that has been created; virtual communities have their own rules, e-tutor must know them, understand them and comply with them;
- encouraging interaction within a virtual community, leading cooperation in the right direction;
- listening to questions and answering them;
- creating tasks with focus on authentic learning and on tasks with a real basis;

- evaluating tasks and discussing their results;
- monitoring education results and further processing and evaluating them;
- analyzing team composition and team work, understanding the need for appropriate team composition for effective cooperation when solving problems;
- creating ambience of personal contact of remote participants.

According to Ligas (2007), the advantage of virtual classes lies in the fact that students do not need to feel uncomfortable in front of the whole class, because they can simply send a private message to their teacher. This helps in removing constraints and communication becomes more natural.

6. USER INTERFACE AND DESIGN OF THE E-LEARNING EDUCATIONAL ENVIRONMENT

Activation of a student who is supposed to study through e-learning is strongly related to the design of user interface, its spatial layout and interactive options. In spite of that, there is not enough attention paid to this area, in contrast with foreign countries (e.g. Zhang, Zhan, Du, 2010). To begin with, reliable research in this area is almost not carried out in the Czech Republic and only individual experience is used (exceptions are for example works of Sedláček, 2006 and Hájek, 2003). That is also the reason why many e-learning environments are so different, despite being intended for students with similar characteristics. There is obvious unfamiliarity with pedagogical effectiveness of individual educational environments related to acquiring knowledge and developing skills.

A user interface of an e-learning educational system is one of the key factors which influence the effectiveness and usability of a particular system. On the basis of analysis of educational environments represented by LMS (Learning Management System), didactic computer programs used for student education and published findings, it is possible to determine basic pedagogical requirements that should be met:

- *must be motivational, must not repel a student* – an interest in working with LMS or an educational program must be evoked and supported;
- *must bring a feeling of safety* – a user cannot be exposed to a situation when he is under pressure or is afraid;
- *simplicity and intuitiveness of use* – a user cannot be thinking about the use itself;
- *freedom/control* – a user can make a mistake and for such cases, he/she needs a clear "exit" to get back (this cannot involve a need to go through a set of complex dialogues);
- *less is sometimes more* – information displayed on a screen at a certain time should not contain information that is irrelevant for a particular action or is not necessary for a user (each information unit is in competition with all others and it can decrease clarity and an apparent meaning of other pieces of information (*HCI - Existuje dokonalé uživatelské rozhraní?[HCI - Does a perfect user interface exist?], 2013*).

When evaluating proposed user interfaces, it is necessary to take into consideration the following criteria (formulated as questions):

- Will a user know which actions should be/can be done?
- Will a user know which controls are related to individual actions?
- If a requested action is done, will a user understand the feedback?

It is possible to state that a user interface must comply with the following principles (Palloff, Pratt, 2001):
be fully functional;

- offer functions necessary for the realization of effective e-learning;
- be simple to use for all participants;

- be user-friendly and visually attractive.

The resulting interface of modern e-learning educational environments should respect the following parameters:

- *interactivity* – a user interface must respond to commands quickly, execute actions and provide adequate feedback to a user;
- *clarity* – objects and elements currently displayed on a screen must provide good possibility for orientation, which also counts for the whole system, and not only to a current screen;
- *transparency* – controlling the system should be easy and system reactions should be intuitively predictable;
- *understandability* – used terminology should be known to users;
- *continuity* – a user interface should be consistent, at least as far as basic features are concern, for the whole system;
- *empathy* – a user should have a feeling that a user interface was specifically designed to meet his/her needs;
- *help* – a user should not have a feeling at any point that he/she is left without any help.

It is obvious that parameters of e-learning educational environments and educational programs must stem from the needs and specifics of users, i.e. mainly students and a teacher. In many cases a universal optimal system cannot be created and that is why it is convenient to create adaptive and flexible systems. On a general level, this matter is dealt with by Human-Computer Interaction (HCI) which is a discipline focusing on evaluation, design and implementation of interactive computer systems that communicate with a human (Zaphiris, Ang, 2009).

7. SIMULATIONS AND MODELLING AS ACTIVATION TOOLS

In case of simulation and modelling, a particular "thing" is studied, represented by any object or phenomenon, with the goal of understanding it. This is very closely connected to education, but the models must be obviously adjusted to didactic means, to regularities and possibilities of those who study them.

The principle of modelling, in a sense of a research technique, is substituting a researched system by its model (more specifically by a system that models it) and the goal is to gain information about an original researched system through experiments with such a model (Křivý, Kindler, 2001).

Depending on taking or not taking time into consideration when modelling, we distinguish between dynamic and static systems. When dynamic systems are studied, it is called a simulation. On a general level, from the point of view of the principles of schematicity, it is not possible unambiguously determine whether using static or dynamic systems is didactically more valuable. In connection with modelling, it is always necessary to realize that the studied model is a simplification, i.e. an abstraction of reality; in other words it is imperfect in relation to the reality. The imperfections are, however, marginal and negligible for studying. Simulations can be used for studying any kind of subject; it is not important whether it is from technical or scientific field or humanities. The use of modelling and simulations in education was dealt with for example by the following authors: Hrbáček (2008), Serafín (2009), Bílek, Rychtera and Skalická (2010).

Regarding didactic possibilities, remote internet labs have been gaining importance; they are based on a principle that an experiment is carried out separately from a learner and he/she controls it through a computer network using a web interface, does experiments and measures relevant data. There are no field limitations for experiments; it can be an experiment in chemistry, physics, technology, etc.

Apart from remote labs, there are also virtual labs, but according to Lisalová and Lustig (2004), remote labs sometimes include mere databases of experiments or observations, eventually camera recordings of experiments, which is not correct. Remote labs and virtual labs are not the same. In case of a remote lab, gained data are real, because they were obtained on a real device.

Remote labs have the following advantages in comparison with the traditional labs:

- free access to a lab (whenever, wherever);
- an experimentalist does not need any real aids;
- an experiment can be repeated several times;
- users work with real measuring devices and measured data are real;
- there is no risk of injury when working with dangerous devices;
- it can be used as preparation for traditional school labs;
- modern approach = an increased student interest;
- time saving for teachers and quick graphical processing of measured values (Látal, 2012).

The very process of learning is based on student active participation and student engagement is supported by dynamic simulations of real phenomena, team work (real and virtual), public presentations and defence of gained results; everything is happening either at a real, present time, or in tele-presence (Lustigová, Mechlová, Malčík, Lustig, 2009). The possibility of connecting a real, currently occurring phenomenon with a computer allows to better grasp the essence of the demonstrated phenomenon and to gain vaster amount of data about the phenomenon (Lepil, 2010).

8. ELECTRONIC CONFERENCE AND VIDEOCONFERENCE

An electronic conference represents virtual space for mutual communication of determined participants and communication itself including a communiqué. It is dedicated to a certain topic using electronic support. Accordingly, it can happen through various channels:

- written text;
- audio (audio-conference);
- video (video-conference).

The electronic conference is a social meeting of people in a virtual world, in contrast with a chat, which can be defined as brief communication between two or more people via a communication network.

In case of education, the aim of the conference is not any kind of communication, but communication aimed at achieving didactic-educational goals. Then, the participants are a teacher/teachers and students. From the educational point of view, it is convenient that it also offers means for archiving contributions and their subsequent browsing, or eventually evaluating.

The electronic conference places significant demands on the teacher, mainly because to maintain a discussion during such a conference can be difficult. Some learners can actively participate in guided conferences, some refuse it; many learners can represent completely passive participants of a discussion during an e-conference. Mainly in case of teaching adults, the prevailing experience is that they avoid participating in discussions because they are afraid they might look stupid due to not knowing something or being wrong, etc. (Zlámalová, 2006).

9. CONCLUSION:

By using analytical-synthetical approaches, the importance of student activation during e-learning has been shown, but also basic possibilities of activation applied in educational practice have been determined. It seems that the most effective is to use a set of activation means; meanwhile, a synergetic effect manifests itself, having a positive effect on learning.

It is vital to prepare e-learning activities in a way that both initial and continuous activation is ensured. Such activation should be of an intensifying character, because attention during learning tends to decrease. It has been proven that modern educational technologies dispose of a variety of tools for ensuring active learning that is based on the constructivist principles.

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